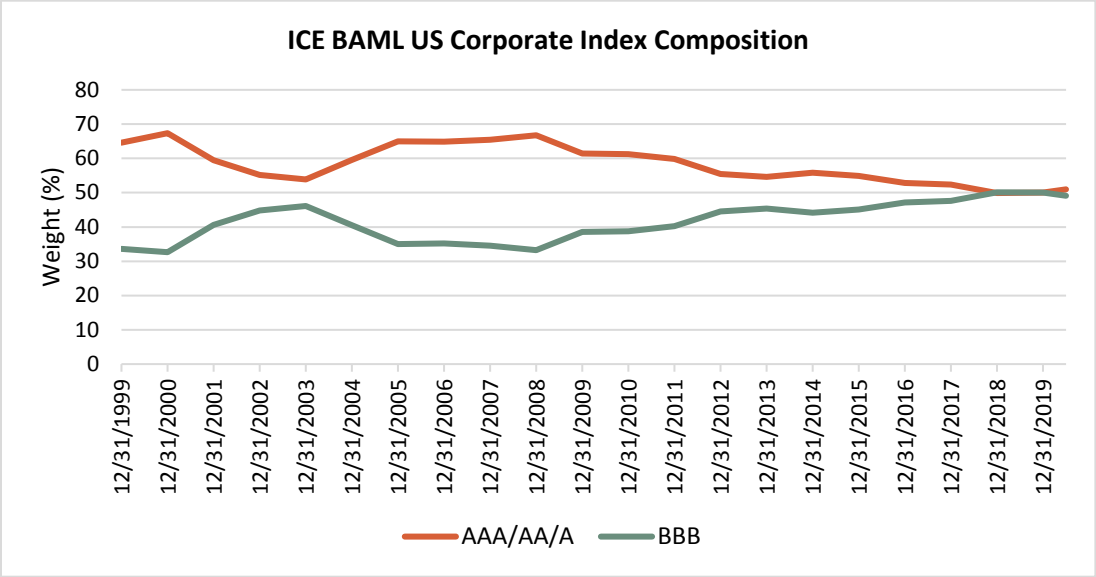
Finding Safety in a Volatile Corporate Market

Over the past 20 years, there has been a significant shift in the ratings composition of the investment grade corporate bond universe. Using the ICE Bank of America Merrill Lynch US Corporate Index (C0A0) as a representation of this universe, the number of securities has grown by about 150% from 3,378 members in December of 1999 to 8,583 members in June 2020. As a greater number of securities and mix of issuers has increased, "BBB" rated bonds have grown substantially as a percentage of the index. In addition to the heavier presence of "BBB" ratings, the dispersion of "AAA"/"AA"/"A" rated bonds has made a gradual shift towards the lower rated portion. With the shrinking portion of the highest rated corporate bonds, the investment grade market has posed challenges in finding a competitive return while remaining up in quality.



Source: ICE BAML/ Bloomberg

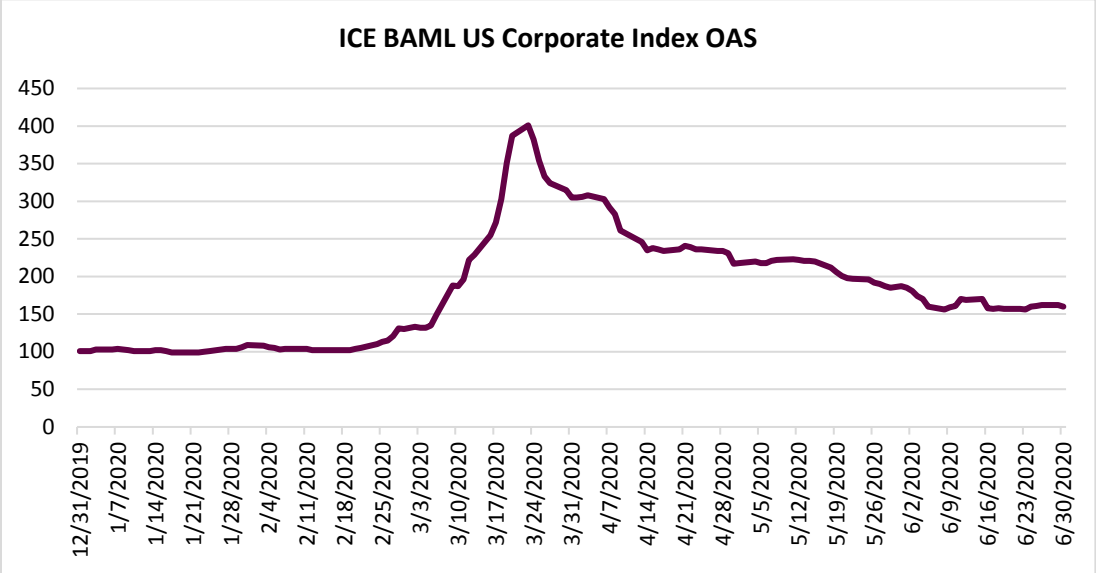
	12/31/1999	6/30/2020
AAA/AA/A	64.60%	50.90%
BBB	33.60%	49.10%

Source: ICE BAML/ Bloomberg

Within the investment grade universe, corporate bonds provide an attractive risk adjusted return profile. In addition to the macroeconomic risks that the investment grade fixed income market is exposed to, corporate bonds add a level of microeconomic risks that are specific to each issuer. When a volatile macroeconomic background is present, like the COVID-19 pandemic, micro-level risks are often heightened. Since the beginning of calendar year 2020, the investment grade corporate market has been very volatile. To gauge the level of risk across the market, the option-adjusted spread (OAS) may be used. The greater the OAS, the greater the level of perceived risk for holding corporate bonds or other spread products. At the start of 2020, the ICE BAML US Corporate Index's OAS was 101, and it hit a high point of 401 on March 23rd. By June 30th the index OAS contracted back to a level of 160. With the rapid contraction of spreads, it may initially appear that the risks associated with the pandemic subsided and company fundamentals on average remain strong. In this case, history was made as an external market force made an immense impact on prices across the corporate bond market: the Federal Reserve's exchange-traded fund (ETF) and corporate bond purchases.

Option-Adjusted Spread (OAS): The measurement of the spread of a fixed-income security rate and the risk-free rate of return, which is then adjusted to take into account an embedded option.

Exchange-Traded Fund (ETF): A type of security that involves a collection of securities—such as stocks or bonds—that often tracks an underlying index, although they can invest in any number of industry sectors or use various strategies.



Source: ICE BAML/ Bloomberg

Beginning on May 12th, the Fed began to purchase corporate bond ETFs and by June 17th had poured $6.8 billion into 16 different funds—nine of these being investment grade. About 45% of the Fed's purchases had been between only two funds—iShares iBoxx Investment Grade Corporate Bond ETF (LQD) and Vanguard Short-Term Corporate Bond ETF (VCSH)—both being investment grade. On June 17th, the Fed had announced that it would be transitioning its Secondary Market Corporate Credit Facility actions

from ETF purchases to individual bond purchases. According to the Fed, roughly $1.3 billion of individual bonds were purchased in the latter portion of June. Due to the massive purchasing power of the Fed, the corporate bond market has received an abundance of liquidity and price support regardless of issuer fundamentals. Through July, the Fed's purchases of corporate bonds slowed alongside a statement that purchases may wind down as the market appears stabilized. Without the price support by the Fed, issuer fundamentals return to the spotlight as the gauge for where the corporate bond market's valuations stand. Although the Fed may continue to purchase bonds through the secondary market as well as initiate purchases through the Primary Market Corporate Credit Facility, it is important to recognize that the outside force of the Fed has given bond issuers an outlet to raise capital while keeping spreads controlled. The credit metrics for many issuers have indeed deteriorated as corporate debt has elevated alongside suppressed cash inflows. To ensure the long term safety of their portfolios, investors need to be able to look through the mask that the corporate bond market is wearing and purchase bonds from those issuers that truly can support their debt levels and interest payments.

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"BBB" rated issuers face elevated risks specifically as they are characterized by having credit profiles with higher leverage and larger interest payments relative to their operating income. With less cushion until receiving a high yield rating, the level of safety found in these corporate bonds may be jeopardized. Once an issuer enters the high yield universe, it faces a substantially higher cost of capital as investors demand greater compensation for the elevated measures of risk assumed. For the investment grade fixed income investor, staying up in quality to avoid these increases in the cost of debt capital is paramount. While already challenged with a corporate bond universe that has shifted to a higher percentage of "BBB" rated bonds, these investors are best served by investing in corporate bonds that have the ability to withstand adverse economic periods to protect their ratings and fundamental credit profiles. In terms of screening for securities that are least susceptible to ratings and credit profile deterioration, financial leverage ratios (represented by net debt to EBITDA) and interest coverage ratios (EBITDA to interest expense) are widely used. The leverage ratio measures a company's ability to pay the entirety of its debt based on its EBITDA, while the interest coverage ratio measures a company's ability to pay only the interest it owes based on its EBTIDA. Given that these two ratios help delineate between the credit quality and ratings assigned to different issuers, a natural assumption is that these ratios differ between ratings tiers to some degree.

Net Debt: Total debt of a company minus its current cash on hand.

EBITDA: Earnings before interest, tax, depreciation, and amortization expenses.

While "A" rated bonds do have the "BBB" rating tier as a cushion before entering the junk space, it is noted that the difference between the lowest "A" rating, A3, is only a single step away from the highest "BBB" rating, BBB1. To feel confident that the fundamentals for issuers with "A" ratings are substantially

different than to those with "BBB" ratings, Student's t-Test can be performed to see if there is a statistically significant difference in the average leverage and interest coverage ratio between the lowest rated tier of the "A" ratings group and the highest rated tier of the "BBB" ratings group. This statistical test compares the two means (average ratio of the A3 group and average ratio of the BBB1 group) over time and produces a result that may suggest the means are unequal. In other words, the respective average credit ratios of the A3 group and BBB1 group may be able to be differentiated.

Student's t-Test: A method of testing hypotheses about the mean of a small sample drawn from a normally distributed population when the population standard deviation is unknown.

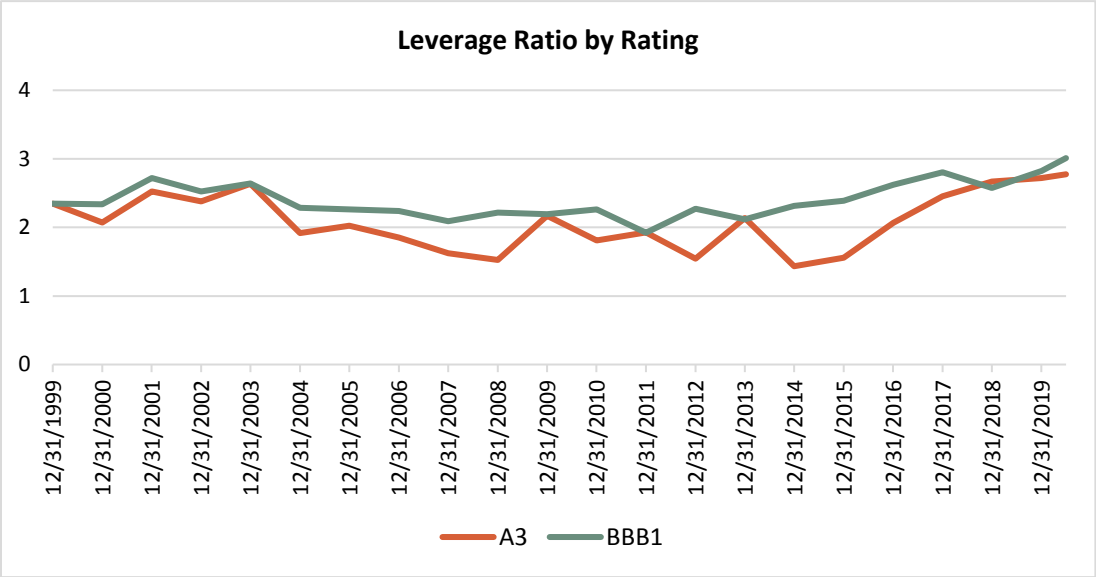
To initiate the test, the default assumption is that the leverage/interest coverage ratio between the two groups is equal. This assumption is labeled as the "null hypothesis." To argue against this default assumption, an "alternative hypothesis" is created to assert that there is some difference between the ratios of the two groups. This hypothesis asserts that the difference in each of the two ratios between the two groups is not equal to zero. The t-test will suggest that there is sufficient evidence to reject the null hypothesis and accept the alternative hypothesis if the difference in the average ratios of the A3 and BBB1 groups falls in the very tail ends of the combined distribution. To determine where these tail ends are, a "confidence interval" is introduced. As typical with most t-tests performed, a 95% confidence interval will be used. This means that the "body" of the distribution is the middle 95%, and the "tails" consist of 2.5% on either end (summing up to 5% between the tails).

For the purposes of comparing the ratios between the groups—leverage ratio and interest coverage ratio for the A3 and BBB1 groups—data will root from the C0A0 index members from December 31, 1999 to June 30, 2020. The list of issuers will then be filtered by those that have available data for the leverage and interest coverage ratio. Once this set of data is produced, outliers are removed from the group by excluding those with leverage ratios less than or equal to zero (equates to the 10th percentile) and those with leverage ratios greater than the 95th percentile of the group. The same process is applied for the interest coverage ratio where the lower bound is the 5th percentile and the upper bound is the 95th percentile. A set of two t-tests are then able to be performed:

1. A test for the difference in mean leverage ratio of A3 and BBB1 rated securities and;
2. A test for the difference in mean interest coverage ratio of A3 and BBB1 rated securities.

Before performing a t-test, one must know that there are several different "models" that can be used. The correct choice is determined by running another statistical test called the F-test. In short, this test compares the variances between the two groups being tested and produces a result that determines the correct t-test "model" to use.

Leverage Ratio



Source: ICE BAML/ Bloomberg

Null Hypothesis: The average leverage ratio of the A3 group is equal to the average leverage ratio of the BBB1 group.

Alternative Hypothesis: The average leverage ratio of the A3 group is not equal to the average leverage ratio of the BBB1 group.

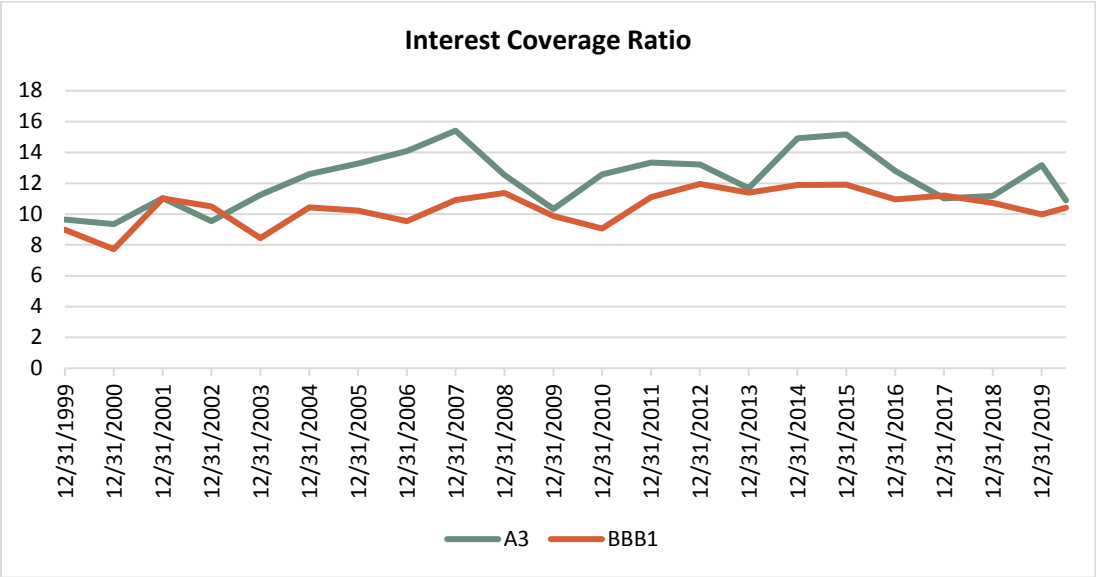
t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	Variable 2
Mean	2.0979826	2.4077859
Variance	0.1770347	0.0738937
Observations	22	22
Hypothesized Mean Difference	0	
df	36	
t Stat	-2.9008308	
T Critical two-tail	2.028094	
P(T<=t) two-tail	0.0063102	

Source: ICE BAML/ Bloomberg

From the output of this test, the absolute value of the t Stat is greater than the absolute value of the t Critical two-tail figure. As a result, the null hypothesis is rejected with statistical significance at the 95% confidence level.

Interest Coverage Ratio



Source: ICE BAML/ Bloomberg

Null Hypothesis: The average interest coverage ratio of the A3 group is equal to the average interest coverage ratio of the BBB1 group.

Alternative Hypothesis: The average interest coverage ratio of the A3 group is not equal to the average interest coverage ratio of the BBB1 group.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	Variable 2
Mean	12.229564	10.436593
Variance	3.1975135	1.2856408
Observations	22	22
Hypothesized Mean Difference	0	
df	36	
t Stat	3.9718495	
T Critical two-tail	2.028094	
P(T<=t) two-tail	0.0003273	

Source: ICE BAML/ Bloomberg

From the output of this test, the absolute value of the t Stat is greater than the absolute value of the t Critical two-tail figure. As a result, the null hypothesis is rejected with statistical significance at the 95% confidence level.

The results of these two tests display that over a time series of 20 years, the average leverage and interest coverage ratios between the A3 and BBB1 groups can be differentiated with a very high level of confidence. Because there is a meaningful difference in these fundamental credit metrics between the two groups, an investment grade fixed income investor can incorporate these ratios, with a high level of confidence, into the analysis required to maintain an allocation to corporate bonds that provides additional yield and a higher degree of safety in line with the credit ratings.

> *Finding an attractive yield without sacrificing safety is the ideal yet scarce opportunity in the current environment, yet it can be done by understanding the fundamental differences in those companies that are safer and those that carry a riskier profile.*

Today, rates are near or at historic lows and the hunt for yield has proved to be difficult, making the corporate bond market a consideration. Coincidingly, the COVID-19 pandemic has greatly exposed macro and micro level risks as supply chains have been disrupted, consumer demand has fallen, and some industries have had their revenues and income hindered by government regulation. Those companies with high debt levels have a continued obligation to pay back their bond holders while many of their regular business operations are being seriously impeded. Finding an attractive yield without sacrificing safety is the ideal yet scarce opportunity in the current environment, yet it can be done by understanding the fundamental differences in those companies that are safer and those that carry a riskier profile. Investors benefit most by developing a process of analyzing and monitoring the current risks associated with corporate bonds and how those risks evolve with the change of the economic landscape.

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Questions?

Please contact Chandler at info@chandlerasset.com, or toll free at 800-317-4747 with any questions or to learn about investment management solutions for public entity investment programs.